MARCH 1951

FIREMEN

FIFTY-FIFTH YEAR · NATIONAL FIRE PROTECTION ASSOCIATION

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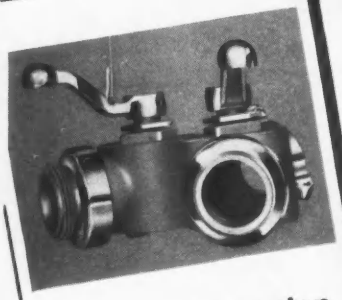

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John BEAN HIGH-PRESSURE FOG FIRE FIGHTERS

NOW THAT air attack is more than a possibility, fire protection is a necessity for your community!

That means bringing your department up to full strength by replacing obsolete apparatus with modern, dependable equipment. It also means advising manufacturers on how to protect their industries in case of air attack.

John Bean High-Pressure Fog Fire Fighters are equally effective for local fire departments or manufacturers because of these five important fire-fighting exclusives:

Carry their own water supply! Entirely independent of municipal water system in case of air attack! Go into action faster, too, because no time is wasted laying hose!

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Require less personnel! Handling of hose lines and clean-up work minimized. Increases effectiveness of any department!

Write today for complete information on how you can give your community effective civil defense with John Bean High-Pressure Fog Fire Fighters.

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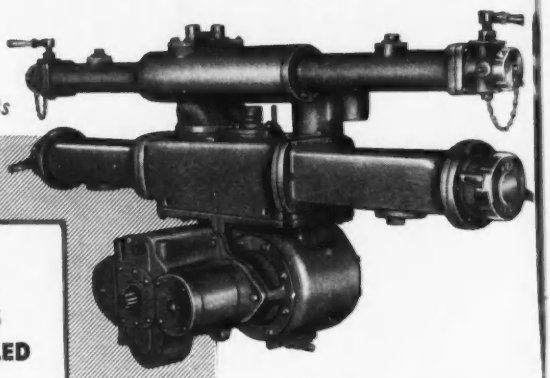

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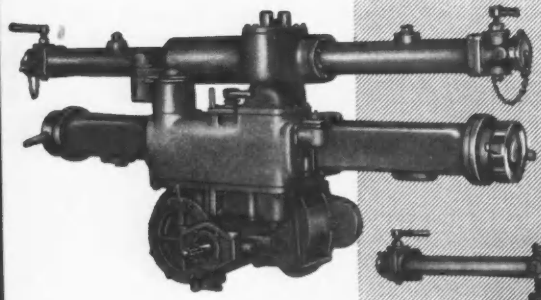
★ *Approved by National Board of Fire Underwriters and All State Insurance Bureaus*



★Type M — Capacities 400-500 gallons at 120 lbs. Gear Drive. Two suction inlets, 3½" or 4". Two 2½" discharge valves.

Type JMS—300 gallons per minute at 150 lbs. or 100 gallons per minute at 600 lbs. for high pressure fog. Two Stage. Gear Drive. Two suction inlets, 3". Two 2½" discharge valves.

Type HM — 200 gallons per minute at 120 lbs. pressure. Gear drive through power take-off from truck transmission. Two suction inlets, 2½". Two 2½" discharge valves.

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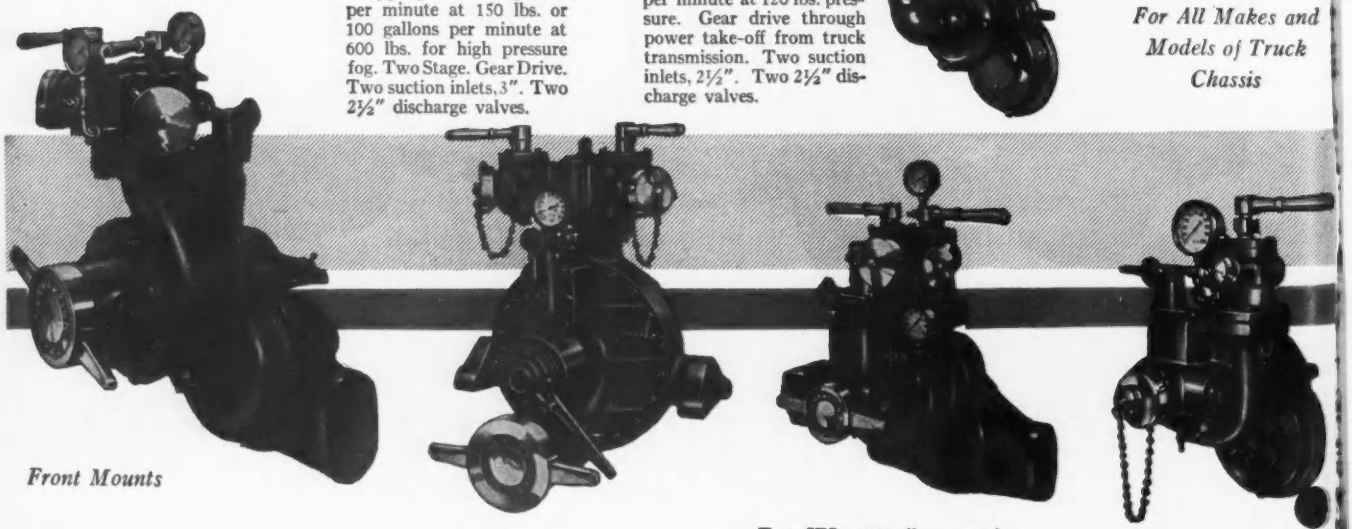

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★ Type F — Capacities 400-500 gallons at 120 lbs. Direct Drive. 3½, 4" suction. Two 2½" discharge valves.

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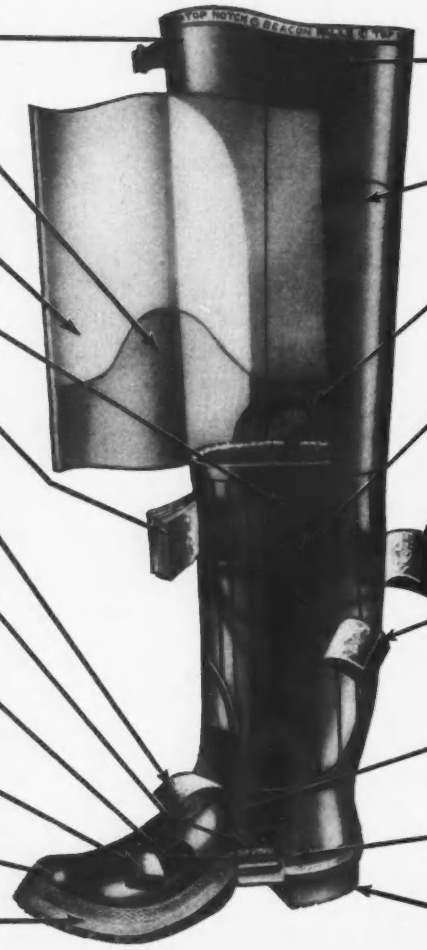

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- THIS ENTIRE BOOT IS VULCANIZED BY AMMONIA CURE - A PATENTED, EXCLUSIVE FEATURE.
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- THICK SIDE GUARDS AT SHANK, GIVING PROTECTION AGAINST NAIL OR SPLINTER PUNCTURING.
- FULL SIZE HEEL.

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Firemen

Volume 18 Number 3

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Published monthly for the fire service members of the
NATIONAL FIRE PROTECTION ASSOCIATION
A VOLUNTARY NON-PROFIT ORGANIZATION
60 BATTERYMARCH ST., BOSTON 10, MASS.

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"Dog's Best Friend — a Fireman"

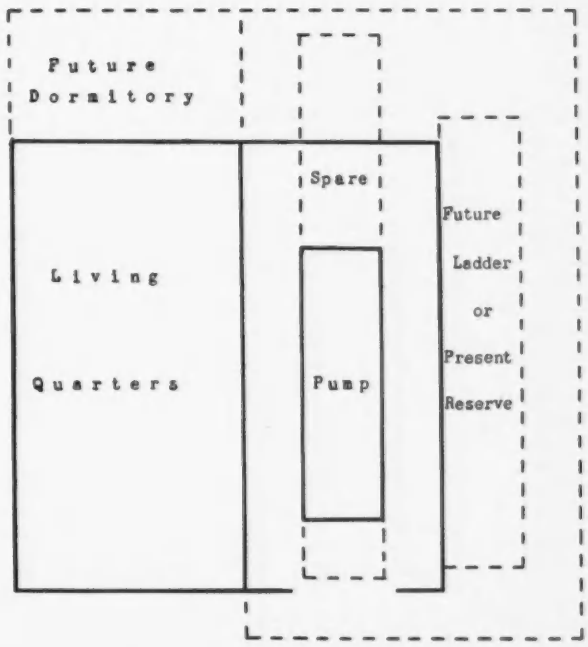
This month's cover shows a well-soaked collie dog who found a friend in Private Marcel Thibault of the Lewiston, Maine, Fire Department. On January 15, the dog, with a disregard for safety more frequently found in humans, wandered onto the ice-covered Androscoggin River and got an unexpected swim. A call from the Lewiston Police Department brought the Fire Department with Aerial No. 2.

A 25-foot ladder was placed on the ice and Private Thibault crawled out to attempt the rescue. In doing so, he joined the collie in the water when the ice failed to support his weight. Captain Eugene A. Beaudoin and Private Thomas Ouillette, also shown, were on hand to make the rescue successful.

Several years ago the Board of Fire Commissioners prohibited Chief Z. F. Drouin of Lewiston from ordering such rescues because of the dangers they might bring to fire personnel. After many appeals from citizens, Chief Drouin has continued to allow these operations on a voluntary basis, with good publicity for the Fire Department resulting. For further information on these activities, please turn to page 27.

Faulty Fire Station Planning

Despite frequently published advice by fire protection authorities, city after city continues to make the same mistake when building new fire houses. This mistake is the provision of an apparatus room only large enough to house one truck, leaving no room for future growth of the department in the area served, and providing no space for the storage of reserve equipment that may be obtained with the purchase of new apparatus. One middle-western city recently built a fire station costing over $45,000 which has an apparatus room of only 17 x 38 ft. A 17 ft. apparatus room will not accommodate two trucks abreast, and a room 38 ft. deep will not accommodate two trucks one behind the other. By adding about fifteen feet to the length and a dozen feet to the width of the room, the station would be large enough to house at least three vehicles without any major change in design. In other words the cost of housing one vehicle exceeds $45,000 and for an additional expenditure, which certainly need not be over 10 or 20 percent greater, the building could have been arranged to house three vehicles, including a junior aerial truck. The unit cost for housing one truck on this basis would be about $45,000; for two trucks perhaps $25,000 each; for three trucks, perhaps $20,000 each.



The building of inadequate fire stations is a form of economy which can prove costly to a city in years to come.

Annual Meeting

The fifty-fifth annual meeting of the National Fire Protection Association will be held at Detroit, Michigan, May 7–11, 1951 with headquarters at the Hotel Statler. The meeting will open on Monday, May 7 with simultaneous program of the Fire Marshals', Railroad, and Electrical Sections. The first general session will be held on Monday evening and will feature a speaker of national prominence. Other sessions will provide forums on Civil Defense, Municipal and Rural Fire Protection, Transportation, Flammable Liquids and Gases, Fire Detection and Extinguishment, and Public Education.

Small Fire Departments in Civil Defense

by Horatio Bond, Chief Engineer, National Fire Protection Association
Secretary, NFPA Committee on Civil Fire Defense

ANY very large city is likely to be a target for attack by A-bombs or other incendiary weapons in connection with any future war. Of this there is no question. The role of members of fire departments in the suburban areas immediately surrounding great metropolitan cities is less clearly appreciated than that of their associates in the big city fire departments. The big city fire departments expect to have to fight a lot of bad fires. What is expected of the smaller departments, particularly suburban, volunteer and rural departments, is less clearly defined.

The members of small fire departments are not sure just how "steamed up" they should get over their civil defense responsibilities. They have a proper concern to do whatever is useful. Here are some suggestions which can be made to them at this time.

The best advice which can be given to small fire departments is that they get their organization on a sound footing with a company for each available piece of apparatus. Most small departments have extra pieces which could be manned and used in practice. In the case of volunteer and part-paid fire departments it is better to organize regular fire companies, where all the men will be on the same basis, than it is to set up some new companies purely for civil defense purposes or as auxiliaries.

All of the men in all of the companies should complete a course of basic training such as is defined and carried out by the various state-wide training programs. There may prove to be some special training to be done for situations which may feature the A-bomb attack but, in general, the fire department's job will be to fight fires and the wartime fires will be the same kind of fires as peacetime ones except there will be a great many more of them. The important thing is to get all men on the rolls who have not taken that training to take it and men who have had basic courses, but not recently, to take them again and also to take as many advanced courses as they can.

Advice to the Public

PEOPLE are going to come to the fire department in the small community, as well as the large one, for advice on fire safety matters in wartime. Tell them to do the usual things which are best fire prevention measures in peacetime: to keep their places free from rubbish and all quick-burning materials and to know what to do in case of a fire in their homes.

You can tell householders to get an official government booklet entitled "Survival Under Atomic Attack," by sending 10 cents to the U. S. Superintendent of Documents, Washington 25, D. C. There is also a good little pocket book entitled "How to Survive an Atomic Bomb" by Richard Gerstel, which is published in a Bantam Books edition which can be obtained for 25 cents at many stores. The advice in both of these publications is sound.

Some bad advice which has been published includes the suggestion that on an A-bomb alert people should frantically do all sorts of silly things. One of these bits of bad advice is that people should try to shut off connections for gas, electricity, water and heaters.

There is not space here to discuss all of the complications you could get into by literally following such advice. It is enough, for example, to point out that shutting off water might prevent it from being available for fire fighting, shutting off electricity would cut off the radios, shutting off heaters might cause sickness and the freezing of water pipes in severe cold weather. Shutting off gas at the meter would introduce an explosion hazard when it came time to turn on the gas again.

In general, a lot of this frantic running around is just what an enemy would like to accomplish by an attack. Frequent interference with normal activity could affect industrial protection in cases where an actual attack was not made or was beaten off. The confusion incident to an air raid alert would extend over a far greater area than any which would be actually damaged.

When householders come to you for advice on specified points, therefore, you should be able to advise them. For example, tell them not to try to fill the bathtub with water for fire fighting when the air raid alert sounds. If they want water for fire fighting they had better have some covered barrels of water prepared before the fire. Water should not be shut off at the house supply but kept in service as long as possible.

As to gas appliances, recommend that these be shut off only at the usual shut-off on the appliance, unless otherwise instructed by the local gas utility company. Advice to shut off automatic gas heaters, except by the readily understood method of turning down thermostats, is not recommended.

On electric appliances, shut these off only at the usual shut-off switches, unless otherwise instructed by the local electric utility company. Advice to shut off electrically-controlled automatic heaters, including coal, oil or gas-fired, other than by the readily understood method of turning down thermostats, is not recommended.

Where oil heating is used, you can turn down thermostats on electrically-controlled oil-burning heaters and close the valve provided on oil stoves and gravity-feed oil burners for manual control.

Plant Protection

IT is too early to advise every industrial plant to provide bomb shelters and things like that but it is in order to recommend that industrial plants look over their water supplies and make sure that they have some source of water for fire fighting other than the public water system. It is going to be particularly important for industrial plants to keep automatic sprinkler protection and other fire protection equipment in good operating condition.

If a manufacturing plant asks your department for advice, get for them or tell them to get from the National Fire Protection Association, for 25 cents, a 40-page pamphlet entitled "Employee Organization for Fire Safety." This contains good sound measures for the organization of the plant for fire safety and it describes procedures for first aid fire fighters (fire guards), fire brigades, watchmen, alarm systems, maintenance of protective equipment, control of special processes and protection of records.

Life Safety in Hospital Fires

From an address at the FDIC, Memphis, Tennessee, by Roy Hudenberg, Secretary, Council on Hospital Planning and Plant Operation, American Hospital Association, Secretary, NFPA Committee on Hospital Operating Rooms.

THE degree of cooperation between the fire service and hospitals is widely varied from community to community. In some places, cooperation is of the best. The fire chief has studied the fire problems peculiar to hospitals in general, has made himself familiar with the problems of the hospital in his community, and has made himself an advisor to the hospital administrator in these matters.

Then we have the middle ground in which the chief dutifully makes regular visits to the hospital and sees that the men from the nearest fire station make themselves familiar with the hospital layout. He hasn't bothered to study the principles of hospital fire safety, but he does know his code book and through the Fire Prevention Bureau enforces it to the best of his ability.

Then we have the situation revealed by the Underwriters' Hospital Inspection Program in one state in which an average of one hospital in seven had not been visited and was not familiar to the local fire department. I do not blame the fire officials solely for this unfortunate oversight. I feel that the hospital administrator is equally at fault for not having sought the aid of the fire chief.

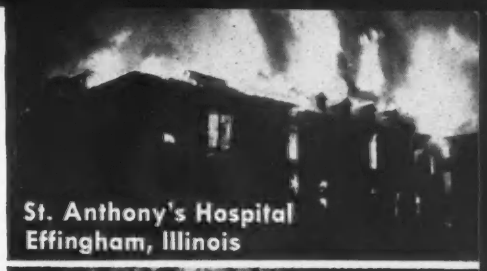
Ultimately the fire chief is responsible for fire safety in the hospital. His only chance of real achievement in the direction of fire safety is through cooperation, education, and persuasion.

BELIEVE me when I say that administrators as a general rule are not indifferent to fire safety. When they can be shown why your recommendations are potentially a matter of life or death, they must go to the board of trustees or to the county board and make plans for the corrections of hazards and secure authority for necessary changes. There are so many things that a hospital needs that an administrator might like moral support if his request is going to run into high sums of money. He may not want you to appear at the board meeting, but he would undoubtedly appreciate your offer to do so.

When I first represented the American Hospital Association on the NBFU Hospital Inspection Committee, the program had already been designated as a voluntary one, and, as far as I could see, could not routinely bring in the fire chief or fire marshal into the inspection. But there was this to consider: every fire marshal and chief who participated in one of these hospital inspection programs was immediately on notice with respect to the various shortcomings in hospitals and unless he enforced correction of these shortcomings, would not be doing his duty. It was our purpose to make these inspections as rigorous as possible in order that the hospitals being inspected might know without equivocation how vulnerable they were to loss of life by fire. We wanted no punches pulled because a governmental inspection authority was a part of the inspection team and would be morally obligated to enforce compliance with the recommendation.

FIRES are caused in hospitals by exactly the same brand of carelessness that causes fires elsewhere. Here are some of the things to consider in making an inspection in a hospital.

What is the function, firewise, of stairways in a hospital? Is it to get the patients out of the building? Let me assure you, if you have time to get the patients out of a hospital by the stairways during a fire, you have no need to evacuate them in the first place. If the fires can be held under control long enough to permit evacuation of the patients by this method, the building is safe from total involvement and the patients are safe from the spread of products of combustion. I say this not because of the comparative safety of the building but to call attention to the slow process which would be involved in removing the patients by this method. The functions of the staircase in a hos-

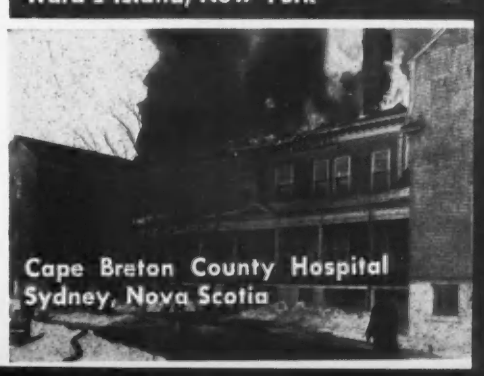

St. Anthony's Hospital
Effingham, Illinois

Mercy Hospital
Davenport, Iowa

Eastern State Hospital
Knoxville, Tennessee

Coqualeetza Indian Hospital
Sardis, British Columbia

Manhattan State Hospital
Ward's Island, New York


Cape Breton County Hospital
Sydney, Nova Scotia

pital are to permit fire-fighters to reach the fire and to permit the evacuation of visitors in the event a fire occurs during visiting hours.

The La Salle Hotel fire taught us what to do about staircases in fire resistant buildings. It brought into use the smoke-proof partition with doors of one-hour construction used to divide sections of floors in hospitals and hotels. Section 24 of the Building Exits Code of the National Fire Protection Association has the specific requirements for the placing of these barriers, which limit the length of hospital corridors without a smoke barrier to 150 feet. The number of patients that may be contained within these barriers is 35.

If we stop the vertical spread of fire by protecting vertical openings (including linen chutes, waste chutes, dumbwaiters, and type shafts), and the horizontal spread of fire by dividing the corridors on patient floors, we achieve the situation in which we can then move our patients in the most convenient manner, which is horizontally, and in their beds.

DURING daytime hours a hospital is a busy place. Except for dead storage areas there are very few locations that are not under constant surveillance. After eleven o'clock at night the picture will change substantially. The patient areas are still under constant watch but many areas such as the laundry, storerooms, laboratories, paint shops, and carpenter shops are closed up until the following morning.

It is these areas that we believe should be protected by automatic detection equipment. The object of this protection is to give warning when fire starts in an unoccupied area. How the mechanism is to achieve that warning should be developed according to individual means. In addition I would like to see every hospital equipped with some sort of manual alarm connected directly to the fire department system or connected to the fire telegraph by means of an auxiliary system.

In the all too possible combination of delayed discovery and alarm, the only hope of the fire department of saving the patients in combustible hospital buildings lies in the automatic sprinkler system and the enclosure of stairways. With this protection tied in with some type of automatic alarm there is some promise that complete evacuation of the building may not be necessary. Without this dual protection evacuation by ladder may be possible, *if you are lucky.*

The only way you can judge for yourself the problem that would face you in a hospital of combustible construction is to visit any hospital within your jurisdiction in company of the hospital administrator after midnight. Stand on one of the patient floors and ask yourself and the administrator what would happen if a fire were to break out. Then try to imagine what would happen if, as at Effingham, a fire were to break out after it had gained an undetected headway in the basement. Take stock of the assistance that you would have and the patients that you would have to move.

The Building Exits Code for existing buildings used for hospital occupancy permits the three lower stories to be occupied when all vertical openings are protected and stairways are enclosed with a minimum protection of wire glass in metal frames, providing the building is equipped with automatic sprinkler protection. If the walls, ceilings, and partitions have a minimum fire resistance rating of one hour, occupancy in the four lower stories is permitted. Those requirements are more stringent than they were several years ago and I am proud to say that the revision was made at the request of the American Hospital Association.

There is a fundamental service you can supply to the hospital you want to protect. Encourage and help it to organize for fire emergency. I know that there are firemen who have no patience with the private fire brigade and discourage its formation, but if a private fire brigade fails to work properly it is the fault of the fire chief in the district and is due to improper cooperation on his part. The argument is that the private fire brigade will attempt to handle fires alone and may delay in turning in an alarm until the fire is beyond control. From information that I can gather that is not the case where such a brigade has been properly instructed. Furthermore, where the fire chief has worked with the hospital administrator the administrator will make a rule that fire alarms are automatically transmitted to the city fire department. You will find great value in a trained organized force acting within the hospital prior to the time when you arrive on the scene. Think of the assistance that can be given in the evacuation of patients when a private fire brigade has been properly instructed and trained.

DISCUSS with the hospital administrator how the hospital can be staffed at night to provide additional help. In the small hospital that will present a tremendous problem because there are very few male workers whose duties can be transferred to night-time operation. Larger hospitals may want to employ a watchman, or have interns living on the grounds. In the latter case the fire alarm system should be connected to the interns' quarters, and, of course, to the nurses' home.

Offer to help the administrator to devise an evacuation program. Suggest a fire drill that would bring your apparatus and your men for a simulated fire within the hospital. Be sure to make the point that the fire drill should not be confined to such convenient times as ten o'clock in the morning or three o'clock in the afternoon. Suggest a fire drill at eight o'clock in the evening when there are visitors in the hospital, or at 1:00 a.m. If the hospital administrator is shown that there is need for a midnight drill and that such drill will give added protection to his patients, he will be glad to accept your suggestion.

I assure you, the American Hospital Association has tried very hard to prepare the way for you. Time after time when I have dictated a reply to questions on fire safety I have said "But of course you should consult with your local fire chief for his opinion."

We have done as much as we could to gain recognition of safety facts and will continue to work in the direction of fire safety. Because you men in the fire service also have this same objective, we will help you as much as we can and provide such information and materials as you may not have available through your other sources.

Pertinent Publications!

Recommended **Safe Practice** for **Hospital Operating Rooms**
NFPA No. 56
32 pages, Twenty-five cents

◈

HOSPITAL Fire Safety
NFPA No. 104
136 pages, $1.50

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Fires in Hospitals and Institutions
48 pages, Fifty cents

◈

National Fire Protection Association
60 Batterymarch Street
Boston 10, Massachusetts

A Nozzle That Holds the Line

Wornall Nozzle demonstrated at FDIC in Memphis:

1. **Takes up back pressure.**
2. **Lets pipeman select desired nozzle pressure.**
3. **Permits easy control of big line by one man.**

FOR over 90 years, or at least since steam fire engines came into vogue, fire fighters have been struggling to control and direct hose streams under pressure. Director of Fire, Francis "Brick" Wornall of Kansas City, Mo. (see FIREMEN, October, 1949), decided to do something about this. He knew that most of the firemen's trouble with charged lines comes from the nozzle reaction that takes place when water accelerates from perhaps 10 miles per hour in the hose to over 50 mph when leaving the nozzle. The acceleration of from 1600 to 2500 lbs. of water per minute sets up a reaction amounting to between 60 and 120 lbs. or more with various hand controlled streams from 2½-in. hose, in accordance with the formula:

$R = 1.5\ PD^2$ when:
R = Reaction
P = Nozzle pressure, lbs.
D = Diameter of nozzle tip in inches.

Accordingly, Director Wornall designed a new hose nozzle assembly that takes up a substantial part of the normal nozzle reaction and minimizes the labor required to direct and control 2½-in. hose streams. The new nozzle, now patented and ready for production, was demonstrated by Chief Harvey Baldwin of Kansas City at the 23rd Fire Department Instructors Conference at Memphis, Tenn., in January. The demonstration was made using a 1-in. tip on the nozzle with streams discharging up to 264 gpm. The nozzle is also said to work well with 1⅛-in. and 1¼-in. tips.

Advantages of the nozzle, which substantially controls nozzle reaction, appear to be:

1. After the line is laid, one man can easily direct and control a stream from 2½-in. hose.
2. The pipeman can adjust the stream at the nozzle to give the desired pressure.
3. The nozzle can be adjusted to control pump pressures excessive by 30 to 80 lbs. or more. Example: 180 lbs. pump pressure on 100 ft. of hose was adjusted at the nozzle to 80 lbs.
4. Fire ground hydraulic calculations can be simplified or practically eliminated. For short lines of 300 to 400 ft., pump would be set at capacity (120 or 150 lbs.) and each nozzleman would take the pressure he desires. For longer lines pump would be set for 200 lb. performance. Again the nozzlemen would take the desired pressure.
5. It is possible to use higher nozzle pressures with a 1-in. tip and get the flow equivalent to a 1⅛-in. tip because the higher pressure can be controlled. For example, the 1-in. tip can be operated at 60 to 70 lbs. by one man. This will give the same flow as the 1⅛-in. tip on a conventional nozzle at 45 lbs., controlled by two or three men.

One special bonus that this nozzle provides was not anticipated in its original design. With the solid stream tip and reaction control device removed, it provides one of the best adjustable fog patterns now available. The fog cone is solid and has excellent reach. However, when used in this manner a standard hose crew is needed to control the line.

Of course, in this world "you don't get something for nothing." The nozzle does require more pump pressure than would be needed to supply the same tip pressure with a conventional nozzle. Accordingly, if a line with a Wornall nozzle is being supplied by a pump also supplying a conventional nozzle, care must be taken not to give the latter line too much pressure.

Woman's work? Directing a 2½-in. line can be a woman's work with the Wornall nozzle. With pump operating at 150 lbs. and only 100 ft. of 2½-in. hose, this fireman's wife has no trouble in directing a 200 gpm hose stream single handed. In white coat is Chief Harvey Baldwin of Kansas City, Mo., who demonstrated the nozzle.

The old Indian rope trick? Chief Baldwin shows that once the nozzle has been adjusted to desired pressure it is not even necessary to hold on to the nozzle. This might be handy if it was desired to play the stream into second floor windows. Nozzle pressure shown is 76 lbs. with 1-in. tip giving 258 gpm.

MAKING A GOOD JOB OF IT

BY WARREN Y. KIMBALL

Selecting Size of Pumper

FIRE department pumpers are built to two performance standards, Class A and Class B, and in six general sizes based upon the capacity at which the ratings are given. Class A pumpers give their rated capacities at 150 lbs. and Class B pumpers give their capacities at 120 lbs.

Standard pumper sizes based upon U. S. gallons per minute discharge are:

500
600
750
1000
1250
1500

It will be noted that the 600 gpm size is the only pumper not based on 250 gpm intervals. This size is uncommon and is likely to drop out of U. S. usage because where more than 500 gpm is needed, it is generally desirable to provide a 750 gpm pumper. However, 600 U. S. gallons are equivalent to 500 Imperial gallons as used in Canada and other British Commonwealth countries. Below is shown a comparison of pumper sizes in U. S. and Imperial gallons:

U. S. Gallons	Imperial Gallons
500	417
600	500
750	625
1000	833
1250	1042
1500	1250

Most of the fire department pumpers built by the larger manufacturers of fire apparatus are designed to provide their rated capacities at 150 lbs. pressure and meet the Class A ratings. Much of the fire pumping equipment assembled on commercial truck chassis is also capable of meeting Class A performance tests.

Class B pumpers are those which provide their rated capacities at 120 lbs. pressure. For many years this was the standard upon which almost all fire department pumpers were rated. In most jurisdictions underwriters continue to give the same credit for Class A and Class B performance. In a few areas additional credit is obtained for Class A pumpers by stipulating that they must deliver 120 percent of rated capacity at 120 pounds pump pressure.

At the present time, Class B performance is limited chiefly to 500 gpm pumpers built on the smaller commercial chassis. There are a few 750 gpm pumpers being assembled on large commercial chassis to meet the 750 gpm Class B requirements. One of the situations where Class B performance may be specified for the pumps of larger capacity is where the pumper is to serve at extremely high altitudes. For example, in such cases a pumper capable of Class A performance near sea level may be expected to give Class B performance at 5,000 ft. elevation. On the other hand, if fire departments at such locations desire Class A performance, the apparatus manufacturers can provide equipment of adequate capacity and power to do the job.

IN addition to meeting a capacity acceptance test of two hours duration while taking suction at a 10 ft. lift, new pumpers must also show their ability to produce certain volumes at higher pressures. This is where the Class A standards are much more difficult to meet than the Class B requirements.

Class A pumpers must be able to deliver 70 percent of their rated capacities at 200 lbs. and half of their rated capacities at 250 lbs. Acceptance tests include a half-hour run at each of these pressures.

Class B pumps are accepted if they can deliver half of their rated capacity at 200 lbs. and one-third at 250 lbs. With either class of rating, capacity must be delivered without exceeding 80 per cent of the motor speed at the peak of a certified brake horsepower curve of the type of motor used. Pressure tests must be run at speeds not exceeding 90 percent of the motor speed providing the maximum brake horsepower. In addition, the latest specifications for Motor Fire Apparatus prepared by the National Fire Protection Association call for a spurt test in which the pump must demonstrate its ability to deliver capacity 10 percent greater than its rating and at the same pressure at which capacity is demonstrated (either 120 or 150 lbs.). This is to guard against acceptance of pumpers that barely meet their acceptance tests when new but have no reserve of power, or are improperly designed with regard to pump and motor speeds.

PROBABLY more pumpers of 500 gpm rating are sold than all other sizes combined. This size of pump can be amply powered by a number of available commercial trucks with high speed motors and such pumps provide satisfactory pumping apparatus for most rural and suburban service. In general, it is far better to have two 500 gpm pumpers than only one pumper of larger size which may cost nearly as much as the two smaller pumpers but which cannot provide the dual reliability and usefulness that two smaller jobs provide.

For municipal fire department service, the smallest pumping capacity generally recommended is the 750 gpm pumper. This capacity is needed to provice heavy streams. The 750 gpm pumper also has the ability to provide minimum volume requirements at higher pressures. The Class B 500 gpm pump can give this flow at 120 lbs. pressure but the Class A 750 gpm pumper provides 525 gpm at 200 lbs. pressure.

Nozzle pressures for heavy streams should be between 80 and 100 lbs. Pressure loss in 2½-in. hose with 250 gpm flow is 15 lbs. per 100 ft. Thus, ability to provide higher nozzle pressures and overcome friction loss in hose may make the larger capacity machines a desirable choice. Also, where water must be pumped to a higher elevation more pressure is needed. It takes almost 22 lbs. to raise a column of water 50 ft.

A good way to compare pumpers is to see how many pounds of water they can lift a given number of feet. A U. S. gallon weighs 8.336 lbs. and one lb. per square inch pressure will lift water 2.309 ft. A 500 pump at 120 lbs. does work equivalent to lifting 4168 lbs. of water 277 ft. This is 1,154,536 foot-pounds or pounds of water lifted one foot. A 750 gpm pumper rated at 150 pounds can lift 6252 lbs. of water a minute 346.35 ft. or 2,165,280 foot-pounds. Both ratings include a 10 ft. suction lift to the pump.

IN determining what a given size of pumper will do we must think of it in terms of possible hose streams that it will supply with various hose layouts. Our Class B 500 gpm pumper operating from draft at 120 lbs. will give us two 250 gpm streams through 1⅛-in. tips on 500 ft. long 2½-in. lines over level ground. The nozzle pressure will be 45 lbs. and the rest of the pump pressure will be used up in friction loss. The same

flow could be obtained with 1-in. tips at 71 lbs. but this would reduce the length of line that could be supplied with the same 120 lbs. pump pressure.

The same Class B 500 gpm pumper will provide one 250 gpm stream through 1000 ft. of 2½-in. hose with the pump operating at 200 lbs. But if there is an elevation, or if for some other reason 250 lbs. pump pressure is required, the output of the pump, at draft, falls to 167 gpm. This is not enough water for one good stream from a 1-in. tip but would supply two 1½-in. lines wyed from a 2½-in. line.

The Class A 500 gpm pumper gives its capacity at 150 lbs. This means that it can supply two 250 gpm streams, each through 200 ft. more hose than the Class B pumper can serve. Or the additional 30 lbs. can be used to pump water up a 69 ft. elevation or hill without loss of output.

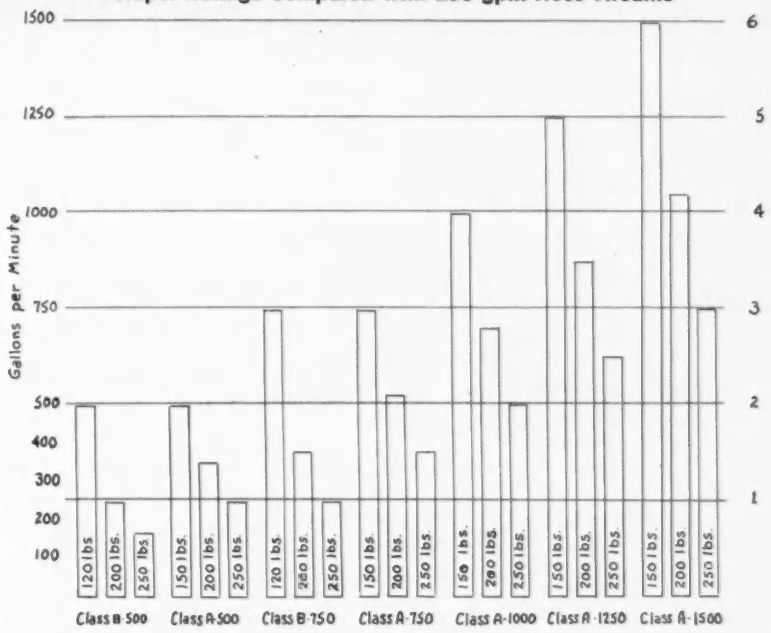
What may be more important, the Class A machine has better performance when the pump is operating in pressure or series operation. It will give 350 gpm at 200 lbs. This means that it can supply a 1-in. tip on a "big line," plus two good 1½-in. lines while operating at this pressure.

Even at 250 lbs. it can provide one 250 gpm stream which a Class B 500 cannot do except when aided by a strong hydrant. Actually, the Class A 500 gives almost the same performance as the Class B 750 pumper in pressure operation.

In view of the fact that it is possible to purchase a Class B 750 pumper on some of the available commercial chassis, it may be well to consider the difference in performance between the Class A and B pumpers in this capacity rating. Both give three 250 gpm streams in parallel or volume operation, but the Class A machine provides volume at an extra 30 lbs. pump pressure. This may be important if the total pump output is needed to supply a large nozzle at relatively high nozzle pressure. A 750 gpm pumper rated at 120 lbs. and supplying a nozzle at 80 lbs. nozzle pressure would have only 40 lbs. margin left to overcome resistance in the nozzle and friction loss in the hose. Generally, the pump would have to be within 250 ft. of the nozzle. A 750 pumper rated at 150 lbs. could be 200 ft. further from the nozzle.

More important is what the Class A machine can do in pressure operation. The Class B 750 is able to supply only one good 2½-in. line operating in pressure. The Class A 750 can supply two good 2½-in. hose lines at 200 lbs. and two fair streams through 1-in. tips at 250 lbs. pump pressure.

Pumper Ratings Compared with 250 gpm Hose Streams



This chart shows pretty clearly what each pumper is rated to do at various test pressures. For example, the 1000 gpm Class A pumper gives 4 lines at 150 lbs., 3 lines at 200 lbs. and 2 lines at 250 lbs. The 750 Class A pump gives 3 lines at 150 lbs. and 2 lines at 200 lbs.

ALTHOUGH the 750 gpm Class A pumper is the standard fire department pumper for most municipal service, Class A 1000 gpm pumpers are provided for many fire companies in high value mercantile and industrial areas. The 1250 gpm and 1500 gpm pumpers are a small minority found in a few large cities having special problems such as extensive industrial areas where heavy streams must be supplied through long lines of hose. In such cases, large capacity pumps may be purchased not as much for their rated output as for ability to provide a desired volume at 200 lbs. pressure as shown in the following table:

Class of Pumper	Rated Output at 200 Lbs.
B- 500	250
A- 500	350
B- 750	375
A- 750	525
A-1000	700
A-1250	875
A-1500	1050

At 250 lbs. the 1000 gpm pumper is a 500 gpm machine and the 1500 gpm pumper is a 750 gpm machine. However, such extreme requirements are seldom encountered. When they are it is usually possible to get equal or better results with two 750 or 1000 gpm pumpers, especially as a 1250 or 1500 gpm pumper seldom carries enough hose to utilize its full pumping capacity.

As pumper capacity ratings are based on 250 gpm increments, we show the number of 250 gpm hose streams that the various sizes or classes of pumpers will deliver at various pressures when operating from draft. As should be well known, when a centrifugal pump is operating from a strong hydrant supply the output may be somewhat greater because the pumper will serve as a booster pump adding pressure to the water coming from the hydrant. Also a pumper at a hydrant does not have to lift its supply 10 ft. as it does under acceptance tests at draft. This added performance at a hydrant is a bonus that may prove helpful but which cannot be counted upon where large pumping requirements reduce the residual pressure at the hydrant. In other words, it cannot be expected that a 750 gpm pumper will do the work of a 1000 gpm pumper because the community has a good hydrant supply. As pumpers may have to operate at peak load for a considerable period of time, a good margin of reserve power and capacity is desirable. After all, a 1000 gpm pumper can deliver 500 gpm for two lines at pressures up to 250 lbs. However, the 500 gpm pumper is not designed to supply 1000 gpm.

NFPA Member Departments

Madeira and Indian Hill Fire Company

THE Madeira and Indian Hill Fire Company (member NFPA), located near Cincinnati, Ohio, has again issued a very attractive printed report entitled "Your Fire Department." Accomplishments of the past year in which the fire department participated include the installation of a new community water system and construction of a new ladder truck. In the above picture Chief Floyd E. Nelson is standing beside the new truck and Engineer C. J. Berhmann is in the cab. The new truck is on a 1950 Chevrolet 2 ton cab-over-engine chassis. The firemen removed the body and equipment from the former ladder truck built by Peter Pirsch Fire Equipment Co. on a 1924 White chassis. The truck carries 250 ft. of ladders, a 300 gpm portable pump, generator and flood lights, salvage and clean-up equipment, gas masks and first aid kit.

Kingman, Arizona, Volunteer Fire Department

HOSTS for the Arizona State Firemen's Association Convention this year will be the Kingman Volunteer Fire Department. The convention will take place April 18–21 and the Association will be celebrating its twenty-fifth anniversary at the same time. Erwin G. Shele will be general chairman.

The Kingman Volunteer Fire Department is headed by Chief Joe Miller, Assistant Chief Pearlie Lukehart, and Secretary Richard S. Long. Captains Albert Osterman and William Casson lead the two companies of the department. There are 28 volunteer members, each of whom take a night tour of duty at the fire house. Two paid engineers are on duty at the station at all times.

Members of the department are shown above with the apparatus. There is a new 600 gallon booster tank rig mounted on a Ford chassis with a 600 gpm Seagrave pump. Other apparatus includes a 750 gpm American-LaFrance pumper and a 750 gpm Seagrave pumper.

Dows, Iowa, Volunteer Fire Department

CHIEF Russell Delano, Assistant Chief Lynn Hall, and Secretary William H. Laughlin, Jr., head the Dows Volunteer Fire Department which has an active membership of 20 fire fighters. The department has been organized since 1895 and at present protects a community with a population of 2000.

The fire station is a cement block building with an apparatus room and meeting room. There is a Chevrolet truck equipped with a front end pump and a 500 gallon water tank for use in country fires, and two International trucks with centrifugal pumps.

Members receive $1 per fire and have drill meetings at least once a month. Chief income for the department is through donations, dances, and similar activities.

Sewanee, Tennessee, Volunteer Fire Department

STUDENTS of the University of the South are members of the Sewanee Volunteer Fire Department which was organized during 1950 for the protection of the University, the town of Sewanee, and outlying farm areas. Chief John R. McGrory was appointed as head of the department which has 29 members.

Before being accepted each member must complete a training course given by the department, and after qualification must attend a minimum of four hours of drill each month to remain in active status.

At present a garage is used as the fire station and apparatus consists of a 500 gpm pumper mounted on a Ford F-5 chassis with a 250 gallon booster tank. Besides the miscellaneous small equipment, the truck is equipped with a 40-foot ladder, 800 feet of 2½-in. hose, and 100 feet of 1½-in. hose. The department operates on a budget granted by the university.

Atkinson Fire Protection District Fire Department

WITH 21 active fire fighters, headed by Chief Robert Dean, Assistant Chief Edward Roman and Dr. W. J. Angerer, Secretary, the Atkinson Fire Protection District Fire Department, Atkinson, Illinois, serves an area containing two and one-quarter townships and a population of 1600. The department operates as a fire company with a chief, assistant chief, captain, lieutenant and 16 firemen.

Apparatus is housed in two buildings and consists of a 500 gpm Rock Island pumper mounted on an F-7 Ford with an 830 gallon tank, and a 1934 Ford with a new 300 gallon tank and a 300 gpm front end pump. The rescue squad has an E & J resuscitator and inhalator, a Scott Air-Pak, a Chemox mask. Every man is trained in first aid.

Members are paid $2 for attending fires and $1 for meetings and drills. Chief Dean receives $50 and the custodian receives $10 annually. The department attends training programs at the Illinois Fire College and belongs to the Mississippi Valley Firemen's Association and the Illinois Firemen's Association.

Inspections by Fire-fighting Personnel

From an address by Arthur P. Spottswood, Chief, Training School, Minneapolis Fire Department, at the NFPA Regional Conference, St. Paul, Minnesota

ONE of the chief requirements of a modern fire officer or fire-fighter is the correct and full knowledge of the construction, occupancy and contents of the different buildings in his district. Without such knowledge, he may be compelled to fight a fire more or less blindly and may be unable to render the best service in extinguishing the fire with the least possible property loss. Also, without such knowledge, he may not always know how best to rescue people trapped in burning buildings.

Furthermore, fire-fighters themselves may become the victim of pitfalls, traps and accidents in buildings which they must enter to fight the fire effectively. Fires cannot be fought efficiently from the outside, and one cannot fight fires within the building intelligently and effectively unless he has a thorough knowledge of the entire structure.

A fire-fighter should know the location of all stairways, elevator shafts, light wells, chutes and other vertical openings through which fire may spread and which may prove death traps to fire-fighters. He should know the construction of the walls, partitions, floors and roofs, and the communicating doors between different parts of the building so he may know where to take in lines of hose, or how to keep the fire from spreading, or how he will rescue people. A knowledge of heating and ventilating systems, which often are conducive to rapid spread of fire, will also be a valuable asset.

Close inspection will give to a fire-fighter a knowledge of the contents of the buildings and the manufacturing processes carried on therein, whether or not good housekeeping conditions prevail, and what combustible stock is carried. What explosives and chemicals are stored within, and where stored, are also important. One course of action is proper for places where oils are stored; another where shavings, sawdust, excelsior, cotton, or other combustible stocks are carried.

Open elevator shafts, chutes, light wells, weak partitions, walls, and roof supports, are a menace to fire-fighters in the discharge of their duties. These hazards must be known in advance.

Danger is incidental to a fire-fighter's work, but many of these dangers can be avoided through thorough familiarity with the various buildings and their occupancies.

The officers, and relief officers particularly, must be diligent students of many things. Mere "throwing of water" no longer is considered intelligent fire-fighting. With buildings constantly increasing in size and value, and a multiplication of new fire hazards, the fire-fighter's work demands that he make a scientific study of new conditions as they develop.

A member of the Fire Department about to make an inspection, should approach the proprietor or person in charge of the establishment, ask his permission and see that he thoroughly understands the full purpose of the visit. When you are detailed from your company to inspect a building there are several important points to consider.

What means have been provided to allow the occupants to reach the street level quickly and safely?

What is the accessibility of the building to the Fire Department?

What are the construction and contents of the building?

What are the possibilities of confining a fire to certain parts of the building or to the entire structure?

CARRY a small note book with you in which to make notes. Before entering the building, size it up. See whether it is accessible to the fire apparatus and the location of the nearest hydrants. Note fire escapes, location and number of standpipe and sprinkler connections, if any. Jot down these facts on one page of your note book or pad. See whether the fire escapes lead into halls, offices or work rooms. Notice the type of drop ladder, if any, and how it is operated. Read the signs at the entrance of building and mark down on your pad the type of business occupying each floor. This gives you some idea of the contents of the different floors. Stop a minute and think what effect a fire among the contents of each floor would have upon the upper floors; whether it would endanger the lives of the occupants or the members of your company. Then go to the rear of the building and make a survey as you did in front.

Next, enter the building, ask for someone in authority, introduce yourself and state your mission. Begin your inspection at the roof because, from it, you can see exposures of the building where fire could enter the building or spread to adjoining buildings. Notice the adjoining roofs; whether they could be used in case it became necessary to reach the roof you are on in event of emergency, and whether people on this roof could escape to adjoining roofs or through the windows. Size up the fire escapes — see where they reach the roof. This applies especially to fire escapes of the smoke tower type. Look at the penthouse over elevator or stairways. See if the elevator shaft is sealed at the top by a concrete floor. This will be useful to know in case you have to provide ventilation. Look over the side of the building to see if or where windows are located in the elevator shaft. Make a note of this for it will be useful in case you are called on to ventilate the building.

Examine the standpipe connections to see if they are in good condition. See if there are any dividing fire walls. If so, make a note of this fact. If the building is sprinklered, look over the shut-off on the gravity tank or pressure tank and see if the gravity tanks have the proper amount of water, and if there is proper air pressure on the pressure tanks.

Then start downstairs, noticing if stairway and hallway are obstructed in any manner. If so, make a note. This is a life hazard and must be reported to the Fire Prevention Bureau. Observe whether the elevator shaft is open or enclosed; if open, whether it opens into floor areas. If so, it would add to the danger of fire and smoke mushrooming on that floor. Notice if the stairways are open or enclosed. If enclosed, whether by combustible or incombustible material such as wooden partitions, etc. This is important to know in case of fighting a fire on the various floors or escaping downstairs.

Note if the locations of fire escapes are properly marked or are obstructed in any manner. See if there are openings connecting the various floors, other than the stairway and elevator shaft, as such openings would allow the fire to spread to upper floors, or to communicate to lower floors.

(*Continued on page 28*)

Farm and Rural Fire Fighting

From an address by Norton Ames, given at the NFPA Regional Meeting at St. Paul, Minnesota, on November 18, 1950 Mr. Ames is a member of the NFPA Committee on Farm Fire Protection and a member of the Volunteer Fire Department of Oregon, Wisconsin (Member NFPA)

Part III

THROUGH necessity or interest, almost anyone can learn basic firemanship. Maybe *anything* can learn it, for the story comes out of France of red ants that learned firemanship by necessity.

The *Hartford Agent* reports that in a garden near Paris, it was observed that when a lighted match was dropped on a certain ant hill, the ants seemed to form in brigades and attack frontally in almost solid formation. It was suspected that they ejected the formic acid secreted in their bodies. The match had scarcely a chance to burn half its length before it was extinguished.

Since the lighted match dropped in other ant hills produced only confusion, the fire brigades were a mystery until it was learned that it had been the custom of a professor, in his daily walk in the garden, to drop his finished cigarette on that ant hill. Probably the ant skill of conquering fires was passed on from parent to child.

Small town firemen need, and at least some of them know that they need, basic training on their own trucks. They also need training in the use of small extinguishers, in laying and carrying hose easily and quickly, and in methods of entrance and simple laddering. They need a competent, understanding instructor to teach them how to do, with their own hands, the simple, manual acts in a workmanlike manner.

In our own fire station with our own equipment, we learned to do things in a right way. We progressed from the old, poorly attended, uninteresting practices to a School of Firemanship. The men received no pay for their time at their school, but it was convenient, during the evening, and only down the street and around the corner. In two schools, 85% of our men got their Vocational School certificates for 16 hours of Basic Instruction in Firemanship.

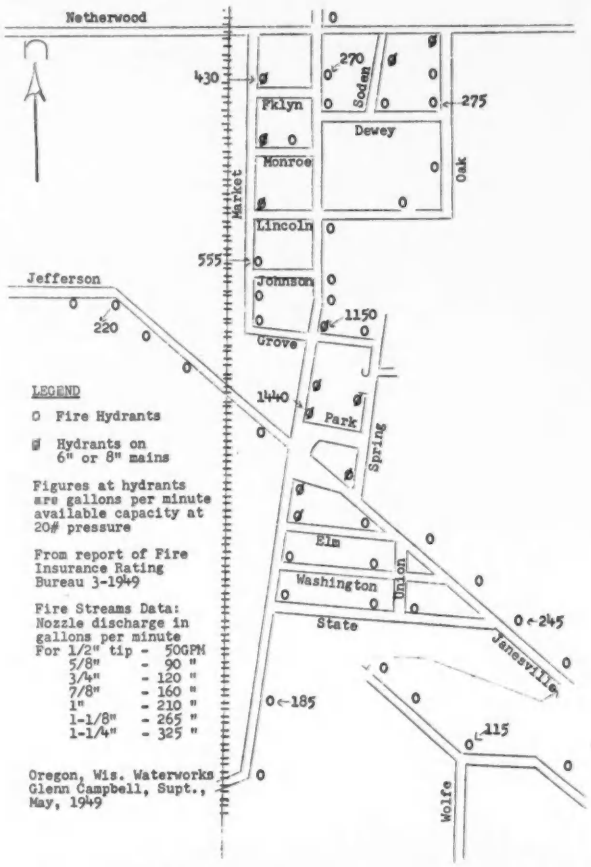
To me it was important that we had raised the general level of knowledge — not only of the bright, aggressive firemen — but of the run-of-the-mine men, the big majority, the men on whom we have to depend at fires.

While the interest was still high, we did not stop with basic school training. With the help of Mr. Cox and Captain Wolff of the Western Actuarial Bureau, and of Mr. Bardwell, Director of the Madison Vocational School, last April we embarked on an Advanced School of Firemanship.

IT seemed selfish to limit the benefits to our own Department. Invitations to participate with us were extended to all volunteer departments within thirty miles. Believe it or not, they came, and they kept on coming. We finally had thirteen class sessions — one every two weeks. We had an average registered attendance of over 80 firemen from an average of 17 volunteer departments.

Thirty-six Oregon firemen will get advanced certificates; and from the other departments where the men have not had basic training, about the same number will get letters of attendance.

Some of our Class Leaders were from our State government and from our University; others, like Hugh McNair, Emmett Cox and Robert Byrus, were willing to come some distance. I am proud of the speakers that we had.



Each member of the Oregon Volunteer Fire Department has been furnished with an 8½ x 11 in. mimeographed map showing hydrant locations and fire flows available in the village. This is important because, while only a few hydrants are able to supply the full capacity of the department's pumpers, a knowledge of the available supply permits the department to employ hose layouts fully utilizing weak hydrants, without the danger of getting poor streams due to an attempt to supply large tips from a poor hydrant. Where hydrant flows are less than 200 gpm, they are still very valuable in replenishing the supply of one of the department's tank trucks operating preconnected 1½-in. lines.

Not to lose sight of the benefits of alacrity and ease in performing necessary, simple, manual acts, and to clinch the benefits received so far, we are planning for this winter, an Officers' course, particularly to teach leadership and how to teach.

Figures for the nation are not available, but in Wisconsin there are only 25 fully paid Departments and some 540 volunteer. Your guess may be better than mine, but I believe that close to 75% of the burnable property of our State has to look to volunteer departments for protection.

As a dollars and cents matter, is it not good sense to apply effort and money to improve the effectiveness of the volunteers?

Acme

Four Baltimore fireboats battled flames aboard the U. S. Army troopship George *Washington* destroyed in fire causing estimated $20,000,000 loss.

"S.S. George Washington" Burns at Baltimore Pier

An account chiefly based upon a report by Acting Battalion Chief Wade F. Teves of the Baltimore Fire Department, approved for NFPA use by Chief Engineer Michael H. Lotz

ONE of the greatest fire losses in recent months occurred at Hawkins Point, Baltimore, Maryland, on the afternoon of January 16, 1951, when fire starting under a U. S. Army pier destroyed the entire 1200 ft. long pier and the decommissioned troop ship S.S. *George Washington*. Various estimates of loss have been given but it has been reported that replacement of the pier may cost $5,000,000 and replacement of the troopship more than $15,000,000.

The pier where the fire started was of heavy timber construction covered by 8 inches of concrete and supported railroad tracks and a pier shed. The fire was discovered by employees of a concern leasing the pier. One of the men pulled city fire alarm box 10-4-2 at 4:03 P.M. When the first chief officer arrived 250 ft. of the land end of the pier was ablaze underneath the concrete paving. Strong winds were carrying the flames out over the water. The only fire cut-offs, 2 x 6-in. wooden draft stops under the pier proved entirely inadequate. In addition to the destruction of the troopship, four smaller vessels berthed at the pier were lost.

As soon as the department arrived additional alarms were sounded and eventually a total of 10 alarms were transmitted bringing 35 engine companies, 8 truck companies, 4 fireboats, and various special units. A total of 70 streams of water were placed in service. These included monitor pipes from fire boats, rail pipes, Bresnan distributors, Hart cellar pipes, Baker pipes, fog nozzles, and 1½-in. and 2½-in. controlling nozzles. One private standpipe hose stream, supplied by a city water main, was also used. Approximately 500 fire fighters battled the blaze. Two firemen were seriously injured.

THE Baltimore Fire Department has 1572 employees with 1392 active fire fighters manning a total of 97 first line company units. These include 58 pumpers, 5 high pressure trucks, 26 ladder trucks, 4 foam-chemical trucks, 1 rescue squad, 2 water towers, 4 fireboats and a pumping station detail. The department also operates 7 municipal ambulances. The department has more than 20 reserve pumpers equipped and ready for use by the off-shift in the event of large fires such as this. Sixteen new 750 gpm pumpers, 3 ladder trucks, a rescue truck have been purchased or built in the last four years.

Baltimore newspaper accounts of the fire stated that permission had to be sought from Washington before the troop transports could be set adrift and indicated that permission was received in time to save the troopship *Edmund B. Alexander*. Newspapers also reported that the fire was under investigation by Government agents. This would be normal procedure following a large fire loss involving government property. The fire department lists the cause as unknown due to the great headway of the fire when firemen arrived.

"Fire Effects of Bombing Attacks"

A publication with the above title is NSRB Document 132, consisting of a 45-page report in two sections. Section II discusses the principal factors involved in fire susceptibility of American cities and discusses factors having the greatest influence on fire spread, contributing factors to fire initiation and spread, and weather factors. This section is digested in this article. Section I was digested in FIREMEN *of February 1951.*

THE residential, much of the commercial and business sections, and the older industrial sections comprising the major portions of American cities, are built up predominantly with load-bearing, masonry wall and wood frame buildings. They are highly susceptible to fire and blast. The disasters that occurred in Germany and Japan could happen here.

No two cities, whether in this country or in other countries are exactly alike. But differences in layout, building density, combustibility, terrain, and other factors can be appraised individually. When this is done, comparisons are possible. For instance, the most striking difference between American and Japanese cities is in residential districts. However, Japanese cities contain many brick and wood frame buiddings of Western or similar design and of good workmanship.

It would be expected that the aiming point of an attack on an American city would be the central core of the city. If the attack were made with incendiary bombs the weight of the attack would be a major factor in the extent of damage; if by an atomic bomb the radius of initial damage would depend on the character of the bomb and the altitude of the explosion.

Our interest in the vulnerability of the various types of buildings to structural damage is only to provide a yardstick for measuring the value of these buildings as protection for vital processes and as human shelters. Japanese cities were very congested and the population density was high. American cities, too, have their crowded slums, and in addition tend to build vertically so that the density of the population is high in a given area even though each apartment dweller may have more living space than his Japanese equivalent.

Factors Having the Greatest Influence on Fire Initiation and Fire Spread. No matter what kind of weapons were used, initiation and spread of fire would be dependent on the fire susceptibility of the target city. Practically all the factors or characteristics of an urban area have some influence on fire susceptibility. These are the factors which appear to be most important in influencing extent and degree of fire.

Building Density. One of the most important factors influencing initiation and spread of fire in any city is its building density — the ratio of roof area to ground area. The more densely it is built up, the greater the number of individual fires; the less open space in which to fight fires, the more likelihood of contiguous or closely exposing buildings. We have found in the descriptions of great fires which developed the phenomenon of a fire storm in Germany that they all occurred in areas of high building density. The crowded building conditions of Japanese cities made them acutely vulnerable to mass fires. The building density of the fire storm area of Hamburg was about 30 per cent and the fire storm areas of other cities in Germany visited by this type of disaster were comparable. Tokyo, which provided the most out standing example of a conflagration, had 22.5 square miles of residential area 46 per cent built up. Hiroshima, which suffered a fire storm following the A-bomb attack, had a density of 27 to 42 per cent in the four square mile city center.

The complete text is available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., for 15 cents. The publication covers in part material previously presented in FIREMEN *and in the 262-page book,* FIRE AND THE AIR WAR. *The book is available for those who wish to study the subject in detail. (Order from National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass., $4.00.)*

It is profitable to speculate on why there was no fire storm at Nagasaki. The wind conditions were favorable and the heat radiation of the bomb was more intense than that dropped on Hiroshima. While the majority of the initial fires in Hiroshima were started by secondary sources (kitchen charcoal fires, electric short circuits, industrial process fires, etc.) both Japanese and American fire experts agreed that more fires were caused directly rather than indirectly in Nagasaki in a ratio of 60 to 40. As fire fighting was ineffective in both cities, it is reasonable to conclude that a relatively low building density as well as the terrain played a major role in preventing the development of a fire storm or a conflagration in Nagasaki.

A knowledge of the building density of American cities is fundamental to adequate planning for civil defense. The procedure suggested consists originally of resolving the city area into sub-areas of fairly homogeneous building density. The limits of these areas would be determined by areas of different building density and wide firebreaks. While physical measurement would give the greatest accuracy it would be possible after a little practice to estimate density, block by block, from detailed city maps. After first determining the limits of the zone, the calculation of building density of that zone would be made according to the formula:

$$\frac{\text{Total ground area of buildings}}{\text{Total area of zone}} = \text{Building density}$$

(The area of the zone would include streets, open spaces, etc.)

While no hard and fast conclusions can be drawn, it is probable that great mass fires of fire storm and conflagration proportions can be expected only in areas of over 20 per cent building density.

Combustibility of Structures. Another factor of primary importance in the propagation of fire is the combustibility of structures. Building construction for the purposes of this study can be resolved into three major classifications in the order of their susceptibility to fire. These classifications are:

1. All frame construction.
2. Masonry — combustible. (Buildings with masonry walls but with combustible material in their principal structural members such as roofs and floors.)
3. Fire resistive.

The typical dwelling and mercantile units in Germany came under classification (2); the dwellings and the majority of the commercial units of Japan came under classification (1). It must be recognized that the most significant difference in these classifications from a fire spread standpoint was the greater hazard of continuing fire in classification (1) due to exposure fires. Except in conditions of fire storm and conflagration, it was found that fire would be retained in most cases within the masonry fire walls of buildings of classification(2) and would not spread to contiguous and closely exposing buildings. The roofs of most German buildings were vulnerable to incendiary bombs because of the combustible supports.

Modern business and industrial buildings constructed as fire-resistive were lacking in many respects the accepted standards for that type of construction in the United States.

However, the conclusion is inescapable that the buildings of the cities of Germany were less susceptible to fire storms and conflagrations because of the combustibility of structures than cities of similar size in the United States.

The cities of Japan, on the other hand, because of building density and combustibility of structures, were more susceptible to conflagration than those of this country. However, the planners of the Japanese campaign were surprised that the cities did not burn as readily as expected. Moisture content of the wood may have been a contributing factor but also the fire load (b.t.u. content) was less in Japanese than in European and American buildings.

Firebreaks. In assessing the susceptibility to fire of American cities, it is necessary to consider firebreaks which may prevent the spread of fire. Open spaces such as streets, parks, canals, etc., will serve as firebreaks and in some cases, if properly located, fire-resistive buildings. If fire storm and conflagration conditions were absent, continuous parapeted fire walls completely across a combustible area could stop fire spread.

Hilly terrain would have an influence on the production of mass fires. Fire might spread more easily when cities are built on hills. On the contrary, effectiveness of the A-bomb was reduced by hills in the city of Nagasaki where a range of hills effectively prevented fire from spreading from one valley to another.

Weather conditions over which defenders would have no control would influence fire spread in case of attack. However, the attacker would be expected to take advantage of these natural factors if they could be predicted, and the defense should not only be aware of them but should exercise special alertness in unfavorable periods.

These factors are all present in varying degrees in American cities and what happened in Germany and Japan could happen here. Adequate fire-control planning for civil defense will depend to a great extent on an assessment of those characteristics of built-up areas which would make them susceptible to fire storms and conflagrations. The method involves resolving the urban city areas into sub areas of fairly homogeneous building density.

Defining the areas of a community in these terms will not only assist in planning what to do in case of attack, but will act as a guide to long range planning designed to eliminate or reduce to a minimum the existence of highly vulnerable areas in our cities. Even if this country never suffers an attack, we will have made permanent strides toward a better America.

●

130 Chiefs Registered at 1951 FDIC

ONE of the reasons for the continued growth of FDIC (Fire Department Instructors Conference) has been the interest shown in the Conference by chiefs of fire departments. Chairman of the conference, Richard E. Vernor reports that of the 950 registered attendance at the 1951 FDIC in January, 130 men were the chiefs of their departments. When it is considered that these chief officers command some of the biggest and some of the best fire departments in the United States and Canada, the influence of FDIC in the field of fire protection and firemen's training cannot be overestimated.

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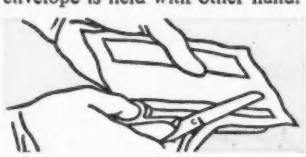

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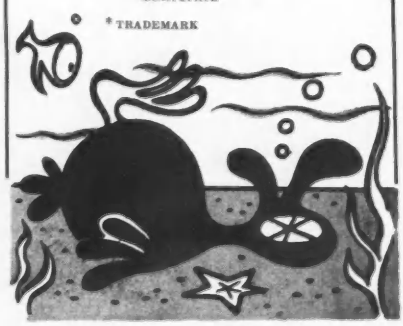

Membership Report

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California: LaSierra Fire Department, Arlington
Chino Rural Fire District, Chino
Connecticut: Suffield Volunteer Fire Department, Suffield
Tolland Volunteer Fire Department, Tolland
Idaho: Payette Fire Department, Payette
Sandpoint Fire Department, Sandpoint
Iowa: Boxholm Fire Department, Boxholm
Dows Volunteer Fire Department, Dows
Maine: Sockanossett Hose Company, Houlton
Maryland: South Hagerstown Fire Company, Incorporated, Hagerstown
Marydel Volunteer Fire Company, Incorporated, Marydel
Massachusetts: Medford Fire Department, Medford
Waltham Fire Department, Waltham
Minnesota: Dodge Center Fire Department, Dodge Center
New Hampshire: Hampton Falls Volunteer Fire Department, Hampton Falls
New Jersey: Hose Company No. 1, New Providence
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Pennsylvania: Boswell Volunteer Fire Department, Boswell
Tennessee: Blount County Fire Department, Maryville
Chief John J. McGrory, Jr., Sewanee
Texas: Dilley Volunteer Fire Department, Dilley
Vermont: Village of Windsor Fire Department, Windsor
Washington: Vashon Island Fire Department, Vashon
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NFPA Publications

FROM time to time FIREMEN presents a list of the latest technical standards published by the National Fire Protection Association. These standards are prepared to provide guidance on reasonable measures for safeguarding life and minimizing losses from fire. They are prepared by representative technical committees and discussed at Annual Meetings of the NFPA. All interests con cerned have an opportunity through the NFPA to participate in the development of standards and to secure impartial consideration of matters affecting them. NFPA Standards are purely advisory as far as the Association is concerned; they are widely used as guides to good practice by fire department, building department, and insurance inspectors and for regulatory purposes. Here are some of the recent editions now available. These, and other publications of the NFPA may be obtained by writing to the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts.

1951 National Electrical Code (Volume V of National Fire Codes)

This volume, bound in red cloth similar to the other volumes of the National Fire Code Series contains the complete text of the 1951 National Electrical Code. It includes extracts from 54 other NFPA Standards affecting electrical appliances plus an advertising guide on approved equipment. **$3.00** — subject to regular quantity discounts.

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This 1950 publication supersedes that last edition reprinted by the NFPA in 1948, and includes revisions adopted at the 1950 annual meeting. These revisions were made by the Committee on Static Electricity in order to make it recommendations consistent with the Committee on Flammable Liquids. **52 pages. Fifty cents.**

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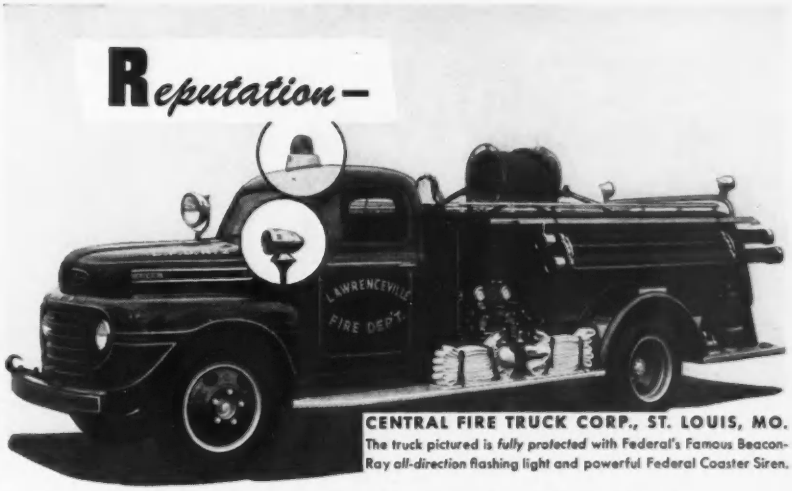
This code supersedes the edition of 1947. It was prepared by the Committee on Protection Against Lightning, a committee sponsored jointly by the NFPA, the National Bureau of Standards and the American Institute of Electrical Engineers. **48 pages. Fifty cents.**

NFPA No. 58 — Standards for the Storage and Handling of Liquefied Petroleum Gases

This complete revision of earlier standards was adopted by the National Fire Protection Association in 1950 upon recommendation of the Committee on Gases. This edition supersedes all prior editions published by the NFPA in the National Fire Codes, by the National Board of Fire Underwriters, or elsewhere. **50 pages. Thirty-five cents.**



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Captures as result of burglar, holdup and other emergency alarms	745
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The towing bar is made of steel tubes and bolted to special lugs in the tank. A stand is also bolted to the assembly and arranged to swivel out of the way when the unit is being towed and fitted with a flat semi-circular foot for use on soft ground.

An attachment on the side of the tank allows connection to a direct main supply while the pump is in operation.

A unit such as this may be of advantage in industrial fire protection because of its convenient size which permits easy movement inside of industrial buildings. It presumably can be used with anti-freeze solutions if treated against corrosion.

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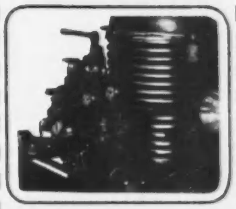

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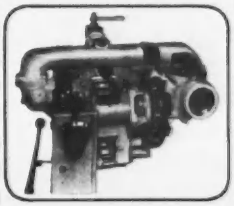

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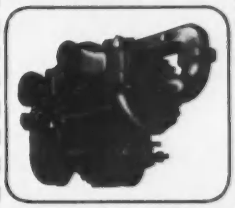

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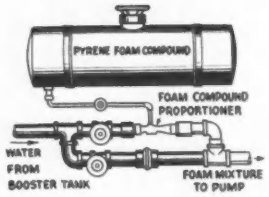

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Activities and Training of Volunteers

by Robert C. Byrus
Fire Protection Engineer
Iowa State College, Ames

From an address before the 23rd FDIC at Memphis, January, 1951

THE overwhelming majority of fire departments in Iowa are located in small communities and most of them are manned by volunteers. There are only 22 paid, and more than 700 volunteer fire departments in the State.

Consider the Atlantic, Iowa, Fire Department. This organization is composed of 33 men, 30 of whom are volunteers. They receive no pay for attending fires or drills, yet under the leadership of Chief Wright Hedges and Chief Mat Mathison that department placed second in Fire Prevention activities in the United States and Canada during 1949. Not content with this achievement, the Atlantic Fire Department won top prize in fire prevention in the 27th annual contest during 1950.

Some departments in these small communities have volunteer members who have contributed to the advancement of the fire service through their initiative and study. The following examples show how individual departments helped to solve problems that arose in their respective communities.

Harcourt is a community with a population of 282. There is a serious problem of getting an adequate water supply for fire fighting to that town's outlying farm areas. Members of the department invested in a few salvage covers and some short lengths of rope. By "bagging" this salvage cover and tying it to the sides of a stock truck an improvised water tank is available and this is used as a supply for booster tanks.

Readlyn met this same problem of water supply by keeping a pile of empty stock tanks in the fire station. When a country fire call is received, merchants bring pick-up trucks to the station, fill these tanks with water, and establish a constant shuttle service to the fire ground and thus keep a continuous water supply available.

Clarion uses another method. All drivers of tank trucks are notified by the telephone exchange when a country fire call is received. They report when and where their services are needed. The Amana colonies met the water problem by installing cisterns at regular intervals in their community. The firemen of Lacona hired caterpillar tractors and scooped out water reservoirs on 24 key farms surrounding their community.

Volunteer fire departments also fill other civic needs. A couple of years ago Manning, Iowa, held a ceremony in which they burned a $10,000 mortgage that the department had assumed on a large community building. This department also bought, land-scaped, and flood-lighted a community athletic field.

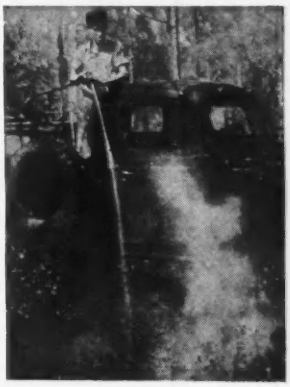
The Emmetsburg fire department paid for a walk-in type refrigerator for the hospital in that community. The Sheldon fire department keeps a skating rink flooded for the youth in the community during the winter time. During the fall of each year they conduct a rat eradication program that has been outstandingly successful. They also organized a baseball league for the teen-agers in the community. Red Oak and Centerville bought and equipped vehicles with completely self-contained emergency apparatus. The firemen at Epworth, Whiting, and Norwalk put in time evenings and Sundays constructing their own fire stations.

WE instructors have the job of planning a training program to use the few hours available to us in an efficient manner. We can ill afford to waste the time of these men who volunteer their services. Firemen should be given the opportunity to attend schools that are close to their homes. It is not enough that a firemen training program consist entirely of an annual fire school at a remote location because many of the firemen cannot leave their businesses for a week to attend these sessions.

Experience indicates that volunteer firemen will attend an evening fire school if it is held within an hour or two running time of their communities. We are bending every effort not only to carry on these organized training programs but to increase the tempo by making more county schools available.

Organized training from the state level in itself is not enough. If a fire school is held in any particular county during one month, there remain 11 months in which the department will be on its own. To help meet this need there is being developed county firemen's associations that meet monthly for the purpose of exchanging information and enjoying fellowship. By having every community in the county play host in their turn, all the firemen have an opportunity to become acquainted with equipment, apparatus, and procedures as carried out by their neighbors.

NIP BRUSH FIRES IN THE BUD WITH A HALE FZZ PORTABLE



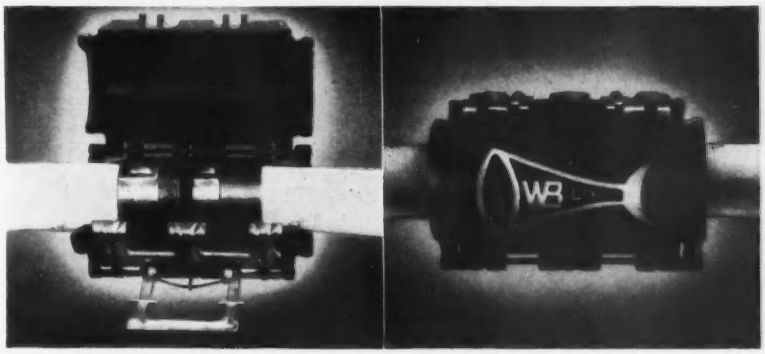
Fire fighters are "run ragged" during the Spring months with brush and field fires . . . and in hundreds of communities they have found a Hale FZZ Portable Pumping Unit mighty handy in putting such fires out quickly and easily. Picture shows a Hale Type FZZ Portable Pumping Unit fighting a brush fire from a moving truck. The unit can be carried on virtually any type of equipment, making it possible to fight fire while in motion, using a booster tank for source of water.

The FZZ will supply from draft, 60 U.S. Gallons per min. at 90 lbs. pump pressure; and 150 U.S. Gallons per min. at 30 lbs. It can supply two capable fire streams through 1½" lines. NOTE: Discharge Adapter can be supplied for use with 2½" fire hose.

Ask for Demonstration!

Write today for FZZ Folder and Bulletin on How to Use Foam with an FZZ

HALE FIRE PUMP COMPANY
CONSHOHOCKEN, PA.



Interchangeable rubber liners that fit all jackets of this style may be purchased separately.

TRUMPET HOSE JACKETS

- **For sealing leaks and ruptures in hose lines.**
- **For connecting two differently threaded couplings.**

Heavy duty spring lock construction and tough live rubber liners provide an absolute seal against water under pressure. Easy to use — invaluable in emergencies. See your Wooster Brass representative or write direct.

HOSE BRASS GOODS — WB LINE — THE WOOSTER BRASS CO. WOOSTER, OHIO

THE WOOSTER BRASS CO.
WOOSTER OHIO

CAIRNS

Outfitters to Firemen Since 1836

THE "NEW YORKER"
(Leather)

For the very utmost in strength, durability and safety, this is the helmet you should have. The largest departments in the country, where the service is hardest, consider it their "standard."

"THE CLIFTON"
(Plastic)

Here's a "regulation" style in Cairns "Flintflex"— a tough, strong, heat-proof, insulating material that stands a tremendous lot of abuse. It's a light, comfortable, safe helmet at a moderate price.

THE "SENATOR"
(Aluminum)

Those preferring an extremely light and comfortable helmet, yet one strong enough to give good protection in hard service, will find satisfaction in this sturdy one-piece model.

Write for Catalog 330

CAIRNS & BRO., INC.
(ALLWOOD), CLIFTON, N. J.

HELMETS

NOW, MORE THAN EVER Safeguard your hose

Don't gamble your $1.60 hose against damage from mildew and rot. Fire hose is EXPENDABLE — EXPENSIVE — and in short supply, protect it with CIRCUL-AIR, the electrically operated HOSE DRYER which circulates pre-warmed fresh air through coiled wet hose at the rate of 5 to 6 air changes per minute. CIRCUL-AIR is designed to lengthen hose life; improve the appearance and functional design of new fire houses; and to save floor space and hard work. NO OTHER METHOD is so fast — so easy to use — so economical.

PATENTED

CIRCUL-AIR
THE AIR CONDITIONING FIRE HOSE DRYER

THESE TOWNS AND . . . 1000 OTHERS PROTECT THEIR HOSE WITH CIRCUL-AIR

Augusta, Ga. • Allentown • Akron • Boston
Burlington • Chicago • Columbia, S. C.
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New Haven • Birmingham • Fitchburg
Meriden • St. Petersburg • Philadelphia

WRITE FOR CATALOG TODAY

THE CIRCUL-AIR CORPORATION
575 East Milwaukee Street
DETROIT 2 ◇ MICHIGAN

New Zealand Fire Council Appoints Chief Fire Officer

CHIEF Thomas A. Varley of the Fire Service of Dorset County, England, has been appointed to head the Fire Service Council of New Zealand. Chief Varley has been a long-time member of NFPA and is past president of the British Institution of Fire Engineers.

In his new position he will head the Fire Service Council that was created by the New Zealand Fire Services Act of 1949. This Act organized a state-wide fire department under the direction of a seven-member council. The council is authorized to set up a headquarter's fire staff for the state, to provide for the inspection of brigades and establishment of training courses. It may require any urban authority to improve the efficiency of its service and the authority must comply, unless it can establish to a magistrate, or by arbitration, that the requisition is unreasonable.

The organization was the result of nearly 40 years study of the problem of shifting from municipal to state-wide control although the Fire Service Act was immediately prompted by the fire in the Ballantyne Department Store at Christchurch, November 18, 1947, in which 41 persons lost their lives.

Mr. Varley has been one of Britain's leading fire chiefs. Before World War II he served in fire departments at Gateshead and Newcastle, then as Chief Officer in St. Helens, and later at Blackpool. When the National Fire Service was organized in 1942 he became Chief Regional Fire Officer of Wales and later of the Northeastern region with headquarters at Newcastle. He drew the post of Chief Officer of Dorset County in the post-war reorganization.

Fire Schools in 1951

Indiana: The Seventh Annual Arson Investigators' Seminar will be held at Purdue University, April 23–27.

Iowa: The 27th Annual Iowa Fire School will be held at Iowa State College, Ames, May 15–18.

Kentucky: The 1951 Kentucky Fire School will be held in Lexington on June 5, 6, and 7.

New Mexico: The 1951 Fire School and Convention will be held in Hobbs on May 14 to 17.

South Dakota: The Pierre Fire Department will be hosts to the South Dakota 22nd Annual Fire School, June 18–22.

West Virginia: The 21st Annual Fire School will be held in Morgantown July 23–27.

Lewiston, Maine, Fire Department Rescue Operations

THE top picture shows Private Marcel Thibault of the Lewiston Fire Department attempting rescue of a collie dog from the Androscoggin River. (See cover and page 7 of this issue.) Private Thibault got a wetting when the ice failed under his weight. But as can be seen, the dog had sense enough to swim towards his rescuer and, as the cover shows, the operation was a success.

In the lower picture, Lieutenant Albert Moreau holds a pigeon which was rescued from a high tension wire. The bird had been hanging upside-down and attracted attention of people on the street. The Fire Department was called, made the rescue, and earned very favorable comments for its work.

Chief Mullaney Promoted

CHIEF Fire Marshal Anthony J. Mullaney of the Chicago Fire Department last month was promoted to the new position of Deputy Fire Commissioner of Chicago and will direct civil fire defense planning for the city. Chief Mullaney is a former member of the NFPA Board of Directors and an active member of the NFPA Committee on Firemen's Training.

FASTER.. ..MORE EFFECTIVE FIRE CONTROL

WITH THE ANSUL *Stream Pattern*

PATENT PENDING

..*plus* BETTER HEAT-SHIELD PROTECTION

Exclusive Features

- Water-tight construction.
- Provides a modified cone-shaped stream pattern without hole in the center of the stream.
- Each nozzle gas pressure tested after assembly.
- Special spring loaded packing to insure lasting water-tightness.
- Designed for use by inexperienced operators.
- Low velocity, more effective stream of dry chemical.

Why Advertise the Nozzle! . . . .

. . . . because the **nozzle** on your ANSUL Dry Chemical Fire Extinguisher is **water-tight** . . . it won't become inoperative due to corrosion or caking of dry chemical within the working parts . . . the most inexperienced man in your plant **can use the ANSUL extinguisher effectively . . . *and only Ansul has a nozzle*** to meet all of these requirements!

If your hazards require special long range straight stream nozzles, you can get Ansul Extinguishers equipped with these nozzles at no extra cost. With Ansul Dry Chemical Fire Extinguishing Equipment you have not only the best fire protection but also a choice of models and designs to meet your requirements.

Send for File No. 643. You will receive our latest catalog, a Periodic Inspection Record Chart, "Fundamentals of Fire Extinguishment" and information about Ansul Dry Chemical Piped Systems for automatic protection.

ANSUL

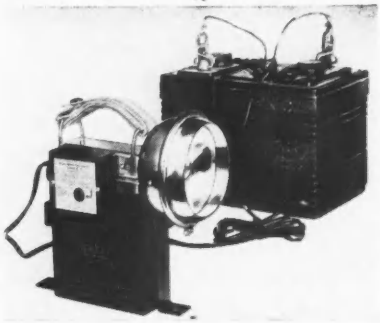
CHEMICAL COMPANY
FIRE EXTINGUISHER DIVISION
MARINETTE • WISCONSIN

DISTRIBUTORS
IN ALL PRINCIPAL CITIES IN THE U.S.A., CANADA AND OTHER COUNTRIES

"PLUS-FIFTY" DRY CHEMICAL IS MORE DEPENDABLE ALL-WAYS!

THIS TRADE MARK ASSURES YOU OF QUALITY PRODUCTS

When Power Fails
WHEAT
FIREMAN'S
SPOTLIGHT
CAN NOW BE CHARGED FROM INDEPENDENT POWER SOURCE



The Model 261 Wheat Fireman's Spotlight now has the same characteristics as the new Wheat Civilian Defense Light with double light output plus standard red Fireman's battery. It can be periodically recharged from regular lighting circuit or WHEN POWER FAILS from Fire Apparatus or any storage battery.

FOR FURTHER DETAIL ON THIS DEVELOPMENT CONSULT YOUR DEALER or write today to

KOEHLER MFG. COMPANY
MARLBORO, MASS., U.S.A.
Also order WHEAT CHARGE INDICATOR

FIRE and POLICE UNIFORMS

SHIRTS
BADGES
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Read what this pleased customer says:

"We have received all our uniforms and badges and believe me we are all pleased — fine fit and fine uniforms." (John A. Johnson, Treas., Golden Valley Fire Dept., Minneapolis, Minn.)

WRITE FOR
FIRE CATALOG H-62
or
POLICE CATALOG H-63

RUSSELL UNIFORM CO.
192 Lexington, New York 16, N. Y.
Corner 32nd Street: Phone MU 6-0828

Inspections by Fire-Fighting Personnel

(*Continued from page 15*)

ENTER the various floors and see if contents would be extra hazardous in case of fire. Note if chemicals, acids or flammable materials are used, or whether the contents would hold or absorb water, adding to the weight on the floor.

Make a note of the contents as well as the manufacturing process. If in doubt as to its hazardous nature, you can look up data on it later. Notice the number of people employed on the floor and what provision is made for their escape in case of fire. Notice the types of fire doors, if any, and whether blocked, open or inoperable. (You will sometimes find sliding doors off their tracks.) Also see if they are equipped with fusible links and weights. If any dangerous conditions are found, make a note and report them to the Fire Prevention Bureau.

A knowledge of fire doors will be invaluable later if you are trying to confine a fire. Note whether there are proper aisles or whether they are obstructed. Observe distance between top of goods stored and sprinkler heads. Goods should not be stored closer than 12 inches below sprinkler heads. There should be at least 12 inches between the top of goods stored and the ceiling. (*These are bare minimum distances. In general there should be 18 inches clear space below sprinklers and 36 inches clear below ceilings or joists in unsprinklered buildings where hose streams must be used.* — Ed.)

If floor is sprinklered, see if there are floor control and drain valves and note their location. Note the stock and see if it is piled on the floor or raised above it, and estimate how efficient salvage work can be done. Note if there are any floor openings from floor below, such as belt conveyors or package chutes, and if the ground floor has access panels to the basement for cellar pipes and if they are blocked by merchandise, etc.

Locate basement or cellar stairway and outside openings, if any. Locate main sprinkler control and drain valves, gas and electric shutoffs, ammonia shutoffs and diffusion valves. Look for tunnels or entrances from one building to another. On leaving building, observe the best way to enter it, especially at night.

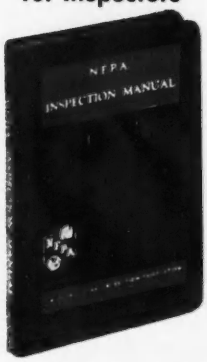
If a fire-fighter knows the contents of a building, whether extra hazardous or not, what effect water or fire will have on them, or whether or not contents will absorb the water and add to the weight of the floors, he can use this knowledge in case of fire in placing his lines to prevent the fire from reaching the contents. Moreover, there may be a great deal of valuable machinery or apparatus in the building which he could protect from excessive water damage. Also, by knowing the location of heavy machinery, safes, etc., or if the materials on the various floors will absorb water, he is then on guard for overloaded or weakened floors.

Many a fire has gotten away from a company because of insufficient knowledge of all the vertical openings in a building, and the fire in the meantime passed through vertical openings to the upper floors or roof. The practice of building inspection by the fire-fighting personnel is of immense benefit to the Department and assists in getting fires speedily under control.

When fire breaks out, a fire-fighter who is familiar through inspection with a building in his district, can more quickly secure an entrance by reason of his knowledge; can reach the stairs and elevators more readily, and can have connections to standpipes made more quickly, thereby saving time in getting into operation at the seat of the fire.

Such a fire-fighter will know where the fire is most likely to be, where it is probably traveling and location of exposures. In short, he will know at the start the possibilities of the fire without having to make a survey or "size-up" of the conditions present.

Pocket Size Manual for Inspectors



NFPA Inspection Manual
366 pp., $3.00 per copy

($2.00 each for six or more copies ordered at the same time and sent to the same address.)

National Fire Protection Association
60 Batterymarch Street, Boston 10, Mass.

DO YOU KNOW

Why the "Jelly Bomb" Is So Effective In Tank Warfare?

(See Answer Below)

Get a Supply of **Indian Fire Pumps** NOW to Protect Your Home and Property Against FIRE BOMBS. This is Important!

ANSWER: Because upon explosion the burning "jelly" clings to and destroys the tank.

INDIAN
FIRE PUMPS

Only clear water is used in the big 5 gallon tank. No chemicals. Tanks available in galvanized steel, brass or chrome plated. Adjustable nozzle throws powerful stream or spray.

And do you know that if used promptly INDIAN FIRE PUMPS have "what it takes" to extinguish a blaze before it spreads? Their portability and general efficiency makes them first choice of veteran fire fighters.

For Civilian Defense there is no better means of fire protection than INDIAN FIRE PUMPS. An Air Raid Warden equipped with an INDIAN on his back can get about quickly and smash a fire before it spreads. Send for INDIAN FIRE PUMP catalog.

Army squad equipped with INDIAN FIRE PUMPS.

D. B. SMITH & CO.

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Fred E. Barnett Company
600 Spring Street
Klamath Falls, Oregon

Titan Chain Saws, Inc.
2700 Fourth Avenue South
Seattle, Washington

L. N. Curtis & Sons
426 West Third Street South
Salt Lake City, Utah

CANADIAN AGENTS:

Flock Bros. Limited
110 Alexander Street
Vancouver, B. C., Canada

C. E. Hickey & Sons, Ltd.
Hamilton, Canada

AGENTS WANTED

What's New in Fire Equipment?

New Model 350 Dry Chemical Engine

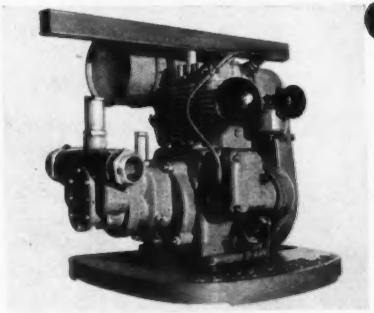
AMERICAN-LaFRANCE-Foamite Corp. announces their Alfco 350, a new dry chemical engine for Class B and C fires. The wheeled portable unit has a discharge range of from 20 to 25 feet for dry chemical. Entire contents can be discharged in about one minute and 15 seconds under operating pressure of 200 psi.

Municipal Fire Hose Catalog

THE B. F. Goodrich Company, Akron, Ohio, has published a new six-page catalog section on its lines of municipal fire hose. Included are Fire King booster and Fire Extinguisher hose, Sentry Chemical Hose, Fire King double jacket, White King, Highflex, Jupiter and Planet fire hose, three types of suction hose, Koroseal swivel jackets and hose couplings. Copies are available on request to manufacturer.

Onan Issues "Standby" Folder

A SMALL but interesting folder entitled "When Power's Off . . . You're Safe!" issued by D. W. Onan & Sons, Inc., tells how any business, factory, institution, farm or home can be protected against property damage and danger to human life which are the frequent results of electric power shortages. Write for Standby Folder A-277 to D. W. Onan & Sons, Inc., 3622 Royalston Ave., Minneapolis 5, Minnesota.



Porto Pump Has New Conservation Model

PORTO PUMP, Incorporated, Detroit, Michigan, has announced a new, improved conservation model, rubber gear pump that quickly develops required pressures up to 200 pounds and delivers 50 gpm at free flow. The pump is easy to carry and simple to operate. It has pre-lubricated bearings, mechanical seals, adjustable automatic by-pass valve, and a 4-cycle engine. Write to manufacturer for further information.

Demand Oxygen Unit Introduced by M.S.A.

MINE SAFETY APPLIANCES COMPANY announces a new demand-type oxygen unit for emergency treatment of smoke inhalation, heart failure, asthma, pneumonia and carbon monoxide inhalation. Quickly put in operation by opening the cylinder valve and placing the facepiece on the patient, this instrument automatically administers oxygen as the patient's breathing requires. A further use is to supply oxygen in conjunction with artificial respiration in cases of asphyxia. Write for a copy of Bulletin CW-5 to Mine Safety Appliances Company, Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.

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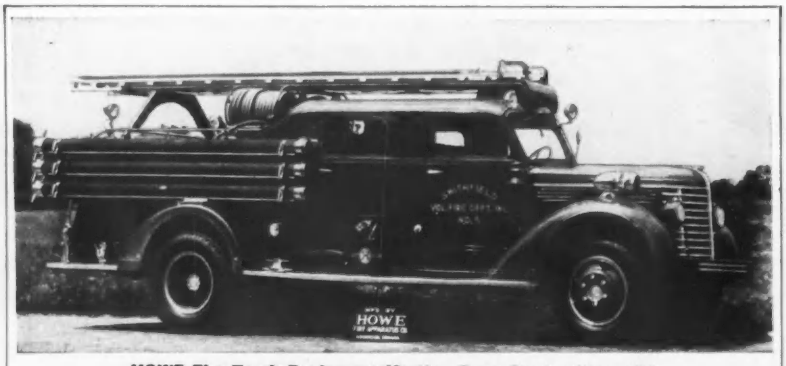


HOWE Fire Truck Equipment Meeting Every Service Since 1872
Centrifugal, Rotary, and Piston Pumps supplied
HOWE FIRE APPARATUS COMPANY, 1406 West 22nd Street, Anderson, Indiana

Is Your Fire Department Ready?

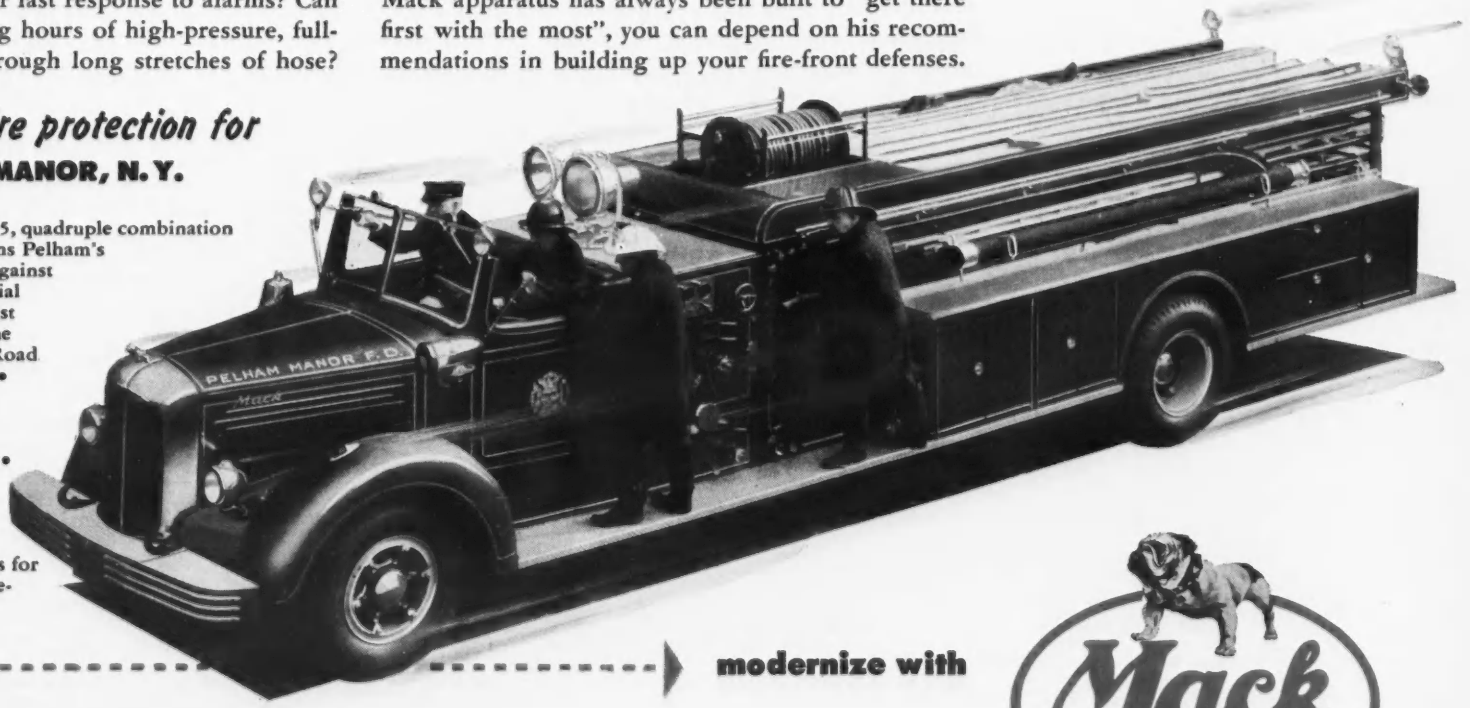
The President has declared a State of Emergency. Our military defenses are rapidly expanding. And our weapons against fire must be equally strengthened.

So check *your* apparatus now. Can each unit cope with modern traffic for fast response to alarms? Can each pumper face long hours of high-pressure, full-capacity operation through long stretches of hose?

Do you have plenty of hose-carrying capacity? Are you prepared to wage large-scale battle against *any* type of fire? While time is still on your side, consult with an experienced Mack representative. Because Mack apparatus has always been built to "get there first with the most", you can depend on his recommendations in building up your fire-front defenses.

All-around fire protection for
PELHAM MANOR, N. Y.

This new Mack Type 85, quadruple combination ladder truck strengthens Pelham's protection—not only against residential and industrial hazards, but also against tanker-truck fires on the teeming Boston Post Road 750 gpm major pump • 250-gallon booster tank • dual-purpose foam and wetwater proportioner • 800 ft. of 2½-in. hose and 500 ft. 1½-in. hose • aluminum ladders • enclosed compartments for portable rescue and fire-fighting equipment.



modernize with

Mack
FIRE APPARATUS

MACK MANUFACTURING CORPORATION
Fire Apparatus Division
Long Island City 1, New York

Factory branches and distributors for service and parts in all principal cities. In Canada: Mack Trucks of Canada, Ltd.

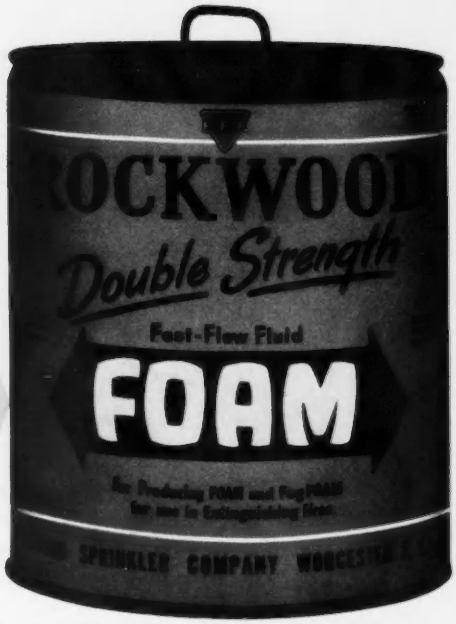
TRIPLE COMBINATION PUMPERS—500 TO 1500 GPM . . . SQUAD AND HOSE CARS . . . AERIAL, CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

A New Double Strength Fast-Flow Fluid FOAM

For Fighting Flammable Liquid Fires

Here is an outstanding new FOAM Liquid to go with Rockwood's advanced type of FogFOAM and FOAM Nozzles for fighting fires in gasoline and other similar flammable liquids.

This new FOAM is now freely available for use with hose line nozzles and permanently piped FogFOAM and FOAM installations. It will give you many advantages over ordinary FOAM Liquid or powder foams.



Rockwood Regular FOAM — the type previously supplied — is still available for use with Rockwood devices.

- **MORE FLUID**
- **FASTER SPREADING**
- **FLOWS FREELY AT SUBZERO TEMPERATURES**

22 ADVANTAGES PROVIDED BY ROCKWOOD NEW FAST-FLOW FOAM

- Faster Extinguishment of Gasoline Fires.
- Greater Resistance to Heat.
- Flows Freely at Subzero Temperatures. (-20°F)
- Stands up under Tropical Climates.
- Double Strength — a Gallon Goes Twice as Far.
- Easier for Firemen and Shippers to Handle.
- Half the Weight for comparable results.
- Cuts Shipping Costs in half.
- Requires only half the space for storage and shipping.
- Covers Burning Surfaces Faster.
- Seals Off Combustible Vapors Completely.
- Foam Blanket Reseals if Broken by Trucks, Hose, Foot Tracks, etc.
- Flows Freely Around Obstructions.
- Clings to smooth vertical or curved surfaces.
- Quicker to Put into Action.
- Easier to Mix with Water.
- More Efficient on Fire Trucks.
- Easily Cleaned Up After Fires.
- Can be Used with Latest Types of FogFOAM and FOAM Nozzles in Hose Lines or Fixed Piping Systems where proper Proportioning is provided.
- Can be used with Standard Liquid Foam Systems for Storage Tanks.
- Costs Less than Old Type Liquid or Chemical Powder Foam.
- Maintenance Costs are Lower than old style Chemical Powder Foam.

F F F

Portable Fire Protection Division

ROCKWOOD SPRINKLER COMPANY

88 HARLOW STREET WORCESTER 5, MASSACHUSETTS

ROCKWOOD